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United States Environmental Protection Agency
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Washington, DC 20460

August 12, 2010

40 CFR Parts 257, 261, 264 et al.
Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities; Proposed Rule
Docket ID No. EPA-HQ-RCRA-2009-0640

Environmental Protection and Structural Integrity with Geosynthetic Systems

Introduction

In response to the recent publication of the Notice of Proposed Rule Making **Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities; Proposed Rule**, related to the care, separation and storage of coal combustion residuals (CCRs) GMA offers the comments and information below. GMA compliments the EPA for the statements and inclination to require geosynthetic lined facilities designed to protect the groundwater from potential contamination. GMA recommends that the regulations propagated require the use of a composite liner system (geomembrane and geosynthetic clay liner) as this system has been demonstrated (by EPA) to be the most effective barrier methodology, regardless of the classification of the materials (hazardous, non-hazardous or designated for beneficial re-use).

Statement of EPA request(s)

In 75 FR 35202, EPA solicits comment on whether the Subtitle D (i.e., municipal solid waste) option should allow facilities to use an alternative design for new disposal units, so long as the owner or operator demonstrates that CCR constituent concentrations are not exceeded at the relevant point of compliance. Additionally, in 75 FR 35203, EPA states interest in receiving data and information that demonstrates whether an alternative liner would be equally protective. Similarly, in 75 FR 35175 and 75 FR 35222, EPA solicits comment with supporting information and data on whether the Subtitle C option should also provide for alternative liner designs based on a specific performance standard. The prescriptive liner system under Subtitle D (40 CFR Part 258) is a composite liner with two components: an upper component consisting of a minimum 30-mil flexible membrane liner (FML, also commonly called a geomembrane), and a lower component consisting of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1 x 10-7 cm/sec. Although the existing Part 40 CFR Part 258.40(a)(1) requirements allow for alternative liner demonstrations, EPA expresses reluctance in allowing alternative liners for new CCR facilities in 75 FR 35203.

Respondent comments

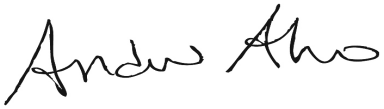
The materials and systems which have been used with great success over the past three decades and which are the current standard-of-practice for lining and groundwater protection systems are manufactured by the members of the Geosynthetic Materials Association. GMA members, in cooperation with EPA and other industry participants have investigated, documented and improved the protocol(s) for these materials over time. Much of this information has been created or gathered via EPA initiatives and publications. GMA provides below a list of a few of the pertinent EPA publications that speak to this topic. The most critical issue to GMA's opinion is a requirement for a composite liner for the storage of CCR materials consisting of a geomembrane liner used with a geosynthetic clay liner as a composite system. EPA published studies have demonstrated the excellent performance of these systems over multiple locations (199) and environments. The most obvious evidence of this fact is included as Appendix A of this correspondence and is extracted from the 2002 EPA publication entitled: "*Assessment and Recommendations for Optimal Performance of Waste Containment Systems*".

Conclusion

Based on the technical information referenced herein and additional EPA and other publications which will be supplied as the comment period progresses, GMA recommends that the US EPA CCR Disposal Proposed Rule for either of the Subtitle C and/or Subtitle D Regulation options define and require a 'composite liner' consisting of two components: An upper component consisting of a minimum 60-mil flexible membrane liner (FML), and a lower component consisting of a geosynthetic clay liner containing at least 0.75 lb/ft2 of sodium bentonite. If 'composite liner' is not redefined to include a lower component GCL, then at a minimum an alternative liner design should be provided.

GMA thanks EPA for the consideration provided. GMA, the respective member companies and their staffs are more than willing to respond to any additional EPA inquiry on this or other related topics. GMA plans to supply additional comments prior to the end of the comment period.

Sincerely,



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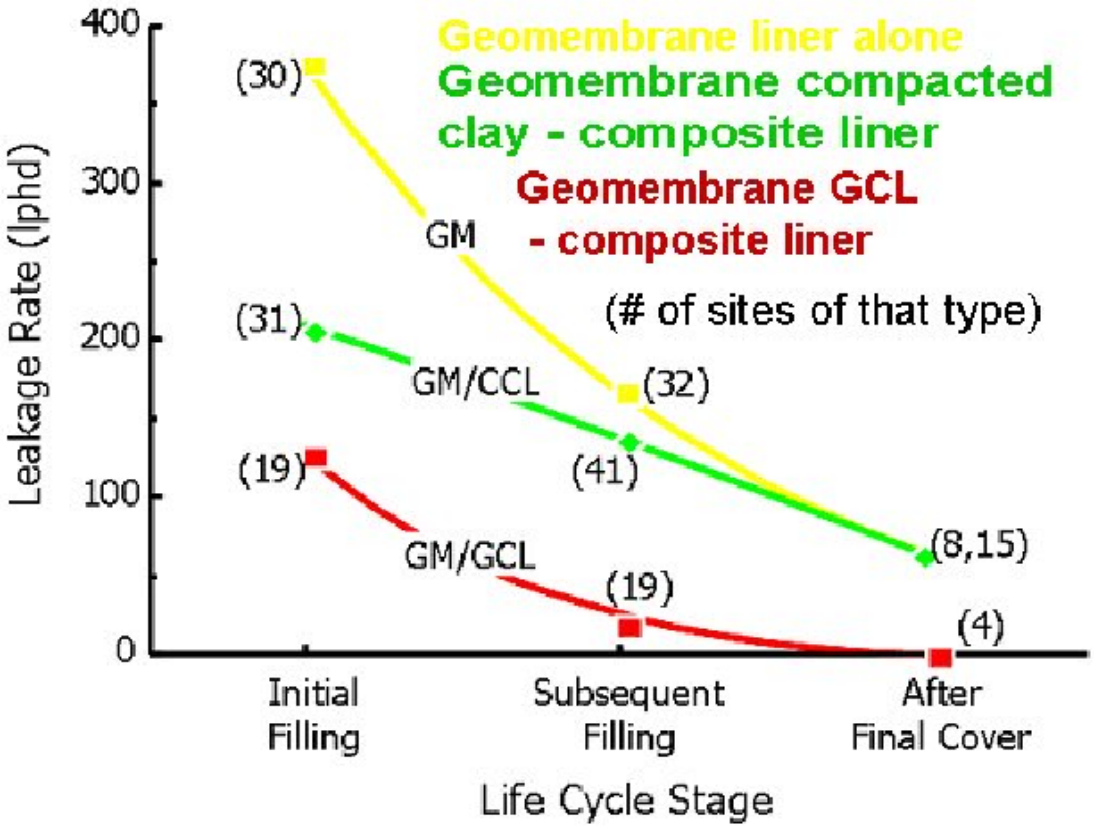
Appendix A

Graph courtesy of the Geosynthetic Research Institute (GRI) at Drexel University.



199 waste disposal sites with a variety of designs and materials were examined. The survey population included sites at different phases of the site lifespan as indicated on the "X" axis. The site leakage (collection) rate was plotted on the "Y" axis for the three types of liner design: Yellow: geomembrane alone, Green: geomembrane and compacted clay, Red: a geomembrane and GCL (geosynthetic clay liner) composite liner system.
The key point is the optimal performance of the composite liner system(s) including a near zero leakage rate for the closed (After Final Cover) site.

Data Source: Bonaparte, Daniel, and Koerner. (2002) Assessment and Recommendations for Optimal Performance of Waste Containment Systems, EPA/600/R-02/099. U. S. EPA, ORD, Cincinnati, OH, http://www.epa.gov/nrmrl/pubs/600r02099/600R02099.pdf

Appendix B

EPA has previously published the following:

Bonaparte, Daniel, and Koerner. (2002) Assessment and Recommendations for Optimal Performance of Waste Containment Systems, EPA/600/R-02/099. U. S. EPA, ORD, Cincinnati, OH. Link to Bonaparte Daniel and Koerner

Daniel and Koerner (1995) Quality Assurance and Quality Control for Waste Containment Facilities, EPA/600/SR-93/182. U.S. EPA, National Risk Management Research Laboratory, Cincinnati, OH. Link to Daniel and Koerner

Northiem and Truesdale. (1987) Technical Guidance Document Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, EPA/530-(S) SW-86-031. U.S. EPA Hazardous Waste Engineering Laboratory, Cincinnati, OH. Link to Northiem and Truesdale

Haxo, Lahey and Rosenburg. (1988) Factors in Assessing the Compatibility of FMLs and Waste liquids, EPA/600/S2-88/017. U.S. EPA Hazardous Waste Engineering Laboratory, Cincinnati, OH. Link to Haxo et al

A pamphlet entitled: Geosynthetic Clay Liners Used in Municipal Solid Waste Landfills, EPA/530/F-97/002, EPA Solid Waste and Emergency Response, Washington, D.C. Link to GCL pamphlet

A report on a workshop by Daniel and Scranton, "Report of 1995 Workshop on Geosynthetic Clay Liners", EPA/600/R-96/149 U.S. EPA, National Risk Management Research Laboratory, Cincinnati, OH. Link to Daniel and Scranton

There are many other EPA publications on the usage of geosynthetic materials in waste containment, groundwater protection and other barrier applications. A partial list is compiled in the *Catalog of Hazardous and Solid Waste Publications* at the webpage listed http://www.epa.gov/wastes/inforesources/pubs/catalog/cat17.pdf

The documents listed above can also be easily located by entering the document name at the EPA/ National Service Center for Environmental Publications document search website: http://www.epa.gov/nscep

Geosynthetic Materials Association

The Geosynthetic Materials Association (GMA) represents the interests of the geosynthetic industry in North America. Members of GMA include 80 of the major manufacturers, distributors, testing firms and business ancillary to the geosynthetic industry. GMA is a division of the Industrial Fabrics Association International (IFAI). IFAI represents more that 2000 companies in the specialty fabrics industry worldwide.

GMA member companies produce, manufacture and install a variety of products use in solid and hazardous waste containment currently regulated under both subtitle C and D of RCRA Geosynthetic materials include liners and composite liners such as geomembranes and geosynthetics clay liners are used in both landfills and surface impoundments. Geosynthetics drainage composites drain off leachate of landfills and surface impoundments. Geosynthetics also provide structural reinforcement in levees and walls of landfills and surface impoundments.

Geosynthetics are a family of civil engineering materials. Their use has expanded rapidly into nearly all areas of civil, geotechnical, environmental, coastal, and hydraulic construction. Many durable polymers (plastics) common to everyday life are found in geosynthetics. The most common are polyolefins and polyester; although rubber, fiberglass, and natural materials are sometimes used.

Since their introduction in the late 1960s, geosynthetics have proven to be versatile and cost-effective ground modification materials. Geosynthetics have also become essential elements as barriers in environmental and hydraulic applications.

There are more than 40 manufacturers of geosynthetics that provide products for the North American marketplace. More than half of the manufacturers are located in the Southeastern U.S or Texas. The industry provides more than 12,000 jobs in the U.S. in manufacturing, fabrication, distribution, and installation.